Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	08.10.12
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	42.0m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	12.3	2.30	23	16	50%
2	10	11.5	1.50	15		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3829

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	08.10.12	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 45.0m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.0	1.00	10		
2	10	11.0	1.00	10	8	50%
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3830

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	08.10.12	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 48.0m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.5	1.50	15	10	50%
2	10	11.0	1.00	10		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3831

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-4(Markanda River-Ambala)

Depth : 50.0m

Date Of Testing : 08.10.12

Tested by : D.Mohanty

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.0	1.00	10	9	50%
2	10	11.0	1.00	10		
3	10	10.7	0.70	7		

Remarks:

Lab Manager

Checked By:

3832

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	1.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.81	
3	Weight of bottle with soil and water W3 in gm	136.38	
4	Weight of bottle full of water W4 in gm	132.46	
5	Weight of dry soil (W2-W1)in gm	6.29	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.37	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3833

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	3.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.23	
3	Weight of bottle with soil and water W3 in gm	137.22	
4	Weight of bottle full of water W4 in gm	133.67	
5	Weight of dry soil (W2-W1)in gm	5.71	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.16	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

Checked By

3831

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.91	
3	Weight of bottle with soil and water W3 in gm	136.93	
4	Weight of bottle full of water W4 in gm	134.20	
5	Weight of dry soil (W2-W1)in gm	4.39	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.66	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

Checked By

3835

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.51	
3	Weight of bottle with soil and water W3 in gm	137.29	
4	Weight of bottle full of water W4 in gm	134.18	
5	Weight of dry soil (W2-W1)in gm	4.99	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.88	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3836

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	7.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.43	
3	Weight of bottle with soil and water W3 in gm	138.73	
4	Weight of bottle full of water W4 in gm	135.04	
5	Weight of dry soil (W2-W1)in gm	5.91	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.22	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3837

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.48	
3	Weight of bottle with soil and water W3 in gm	137.25	
4	Weight of bottle full of water W4 in gm	134.15	
5	Weight of dry soil (W2-W1)in gm	4.96	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.86	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3838

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	12.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.06	
3	Weight of bottle with soil and water W3 in gm	136.84	
4	Weight of bottle full of water W4 in gm	133.37	
5	Weight of dry soil (W2-W1)in gm	5.54	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.08	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3837

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.88	
3	Weight of bottle with soil and water W3 in gm	137.10	
4	Weight of bottle full of water W4 in gm	133.74	
5	Weight of dry soil (W2-W1)in gm	5.36	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.00	
7	Specific Gravity G = (5) / (6)	2.68	

Lab Manager

Checked By

3840

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	16.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.97	
3	Weight of bottle with soil and water W3 in gm	138.19	
4	Weight of bottle full of water W4 in gm	134.78	
5	Weight of dry soil (W2-W1)in gm	5.45	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.04	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3841

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	18.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.43	
3	Weight of bottle with soil and water W3 in gm	137.92	
4	Weight of bottle full of water W4 in gm	134.23	
5	Weight of dry soil (W2-W1)in gm	5.91	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.22	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3842

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	19.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.05	
3	Weight of bottle with soil and water W3 in gm	137.54	
4	Weight of bottle full of water W4 in gm	133.46	
5	Weight of dry soil (W2-W1)in gm	6.53	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.46	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3843

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	22.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.22	
3	Weight of bottle with soil and water W3 in gm	136.89	
4	Weight of bottle full of water W4 in gm	133.96	
5	Weight of dry soil (W2-W1)in gm	4.70	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.77	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3841

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	25.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.03	
3	Weight of bottle with soil and water W3 in gm	137.39	
4	Weight of bottle full of water W4 in gm	133.31	
5	Weight of dry soil (W2-W1)in gm	6.51	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.43	
7	Specific Gravity G = (5) / (6)	2.68	

Lab Manager

Checked By

3845

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	28.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.31	
3	Weight of bottle with soil and water W3 in gm	138.12	
4	Weight of bottle full of water W4 in gm	134.50	
5	Weight of dry soil (W2-W1)in gm	5.79	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.17	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3846

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	31.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.36	
3	Weight of bottle with soil and water W3 in gm	136.67	
4	Weight of bottle full of water W4 in gm	132.39	
5	Weight of dry soil (W2-W1)in gm	6.84	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.56	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3847

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.95	
3	Weight of bottle with soil and water W3 in gm	136.71	
4	Weight of bottle full of water W4 in gm	133.33	
5	Weight of dry soil (W2-W1)in gm	5.43	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.04	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3843

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	34.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.33	
3	Weight of bottle with soil and water W3 in gm	137.68	
4	Weight of bottle full of water W4 in gm	134.05	
5	Weight of dry soil (W2-W1)in gm	5.81	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.18	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3849

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	37.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3850

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	40.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.85	
3	Weight of bottle with soil and water W3 in gm	138.28	
4	Weight of bottle full of water W4 in gm	134.96	
5	Weight of dry soil (W2-W1)in gm	5.33	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.01	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3851

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	42.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.48	
3	Weight of bottle with soil and water W3 in gm	138.19	
4	Weight of bottle full of water W4 in gm	135.10	
5	Weight of dry soil (W2-W1)in gm	4.96	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.86	
7	Specific Gravity G = (5) / (6)	2.66	

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	45.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.06	
3	Weight of bottle with soil and water W3 in gm	136.84	
4	Weight of bottle full of water W4 in gm	133.40	
5	Weight of dry soil (W2-W1)in gm	5.54	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.10	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	48.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.22	
3	Weight of bottle with soil and water W3 in gm	136.89	
4	Weight of bottle full of water W4 in gm	133.95	
5	Weight of dry soil (W2-W1)in gm	4.70	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.76	
7	Specific Gravity G = (5) / (6)	2.67	

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.22	
3	Weight of bottle with soil and water W3 in gm	138.81	
4	Weight of bottle full of water W4 in gm	134.65	
5	Weight of dry soil (W2-W1)in gm	6.70	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.54	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

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ARKI TECHNO CONSULTANTS (I) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF BULK DENSITY & MOISTURE CONTENT OF SOIL SAMPLE

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Location : BH-4(Markanda River-Ambala)

Sl No.	BH No.	Depth in m	Type of Sample	Date of Testing	Weight of Container in gm	Diameter of Sample in cm	Length of Sample in cm	Volume of Sample in cc	Weight of Container + Wet Soil in gm	Weight of Container + Dry soil in gm	Weight of Dry soil in gm	Weight of water in gm	Moisture Content in %	Bulk Density in gm/cc	Dry Density in gm/cc
1	BH-4(Markanda River-Ambala)	1.5	SPT	08.10.12	62.34	3.8	7	79.39	206.83	192.08	129.74	14.75	11.37	1.82	1.63
2		3.0	SPT	08.10.12	61.82	3.8	7	79.39	207.90	191.54	129.72	16.36	12.61	1.84	1.63
3		4.5	SPT	08.10.12	60.71	3.8	7	79.39	206.79	191.44	130.73	15.35	11.74	1.84	1.65
4		6.0	SPT	08.10.12	63.49	3.8	7	79.39	210.36	194.45	130.96	15.91	12.15	1.85	1.65
5		7.5	UDS	08.10.12	60.77	3.8	7	79.39	211.61	185.81	125.04	25.80	20.63	1.90	1.58
6		10.5	UDS	08.10.12	64.84	3.8	7	79.39	217.27	192.17	127.33	25.10	19.71	1.92	1.60
7		12.0	SPT	08.10.12	65.31	3.8	7	79.39	216.94	191.38	126.07	25.57	20.28	1.91	1.59
8		13.5	UDS	08.10.12	60.5	3.8	7	79.39	212.93	187.96	127.46	24.97	19.59	1.92	1.61
9		16.5	UDS	08.10.12	61.31	3.8	7	79.39	215.33	188.83	127.52	26.50	20.78	1.94	1.61
10		18.0	SPT	08.10.12	62.29	3.8	7	79.39	215.51	190.06	127.77	25.45	19.92	1.93	1.61
11		19.5	UDS	08.10.12	63.12	3.8	7	79.39	217.93	190.49	127.37	27.44	21.54	1.95	1.60
12		22.5	SPT	08.10.12	62.74	3.8	7	79.39	224.70	208.89	146.14	15.81	10.82	2.04	1.84
13		25.5	SPT	08.10.12	62.80	3.8	7	79.39	222.37	196.95	134.15	25.42	18.95	2.01	1.69
14		28.5	UDS	08.10.12	64.59	3.8	7	79.39	225.75	198.43	133.84	27.32	20.41	2.03	1.69
15		31.5	UDS	08.10.12	63.78	3.8	7	79.39	226.53	200.12	136.34	26.41	19.37	2.05	1.72
16		33.0	SPT	08.10.12	61.44	3.8	7	79.39	223.34	196.74	135.30	26.60	19.66	2.04	1.70
17		34.5	UDS	08.10.12	60.38	3.8	7	79.39	231.86	201.30	140.92	30.57	21.69	2.16	1.77
18		37.5	SPT	08.10.12	64.11	3.8	7	79.39	237.18	210.19	146.08	27.00	18.48	2.18	1.84
19		40.5	SPT	08.10.12	60.29	3.8	7	79.39	234.15	206.74	146.45	27.42	18.72	2.19	1.84
20		42.0	SPT	08.10.12	65.76	3.8	7	79.39	224.54	199.00	133.24	25.54	19.17	2.00	1.68
21		45.0	SPT	08.10.12	62.48	3.8	7	79.39	233.96	209.60	147.12	24.36	16.56	2.16	1.85
22		48.0	SPT	08.10.12	63.44	3.8	7	79.39	236.51	211.06	147.62	25.45	17.24	2.18	1.86
23		50.0	SPT	08.10.12	63.36	3.8	7	79.39	237.22	212.21	148.86	25.01	16.80	2.19	1.87

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ARKITECHNO CONSULTANTS (INDIA) PVT LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	1.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 79.64

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	36.34	36.34	36.34	63.66
0.425	32.61	32.61	68.95	31.05
0.075	10.69	10.69	79.64	20.36
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 79.64 **Silt and clay %** 20.36

Remarks :-

3857

Lab Manager

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 77.92

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	34.85	34.85	34.85	65.15
0.425	30.98	30.98	65.83	34.17
0.075	12.10	12.10	77.93	22.07
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 77.93 **Silt and clay %** 22.07

Remarks :-

Lab Manager

38[illegible] Checked By

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 79.37

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	37.89	37.89	37.89	62.11
0.425	31.23	31.23	69.12	30.88
0.075	10.26	10.26	79.38	20.62
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 79.38 **Silt and clay %** 20.62

Remarks :-

3859

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 80.17

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	36.67	36.67	36.67	63.33
0.425	29.79	29.79	66.46	33.54
0.075	13.71	13.71	80.17	19.83
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 80.17 **Silt and clay %** 19.83

Remarks :-

3860

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	9.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.09

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.54	0.54	0.54	99.46
0.425	0.40	0.40	0.94	99.06
0.075	0.15	0.15	1.09	98.91
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.09 **Silt and clay %** 98.91

Remarks :-

3861

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	10.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.47

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.74	0.74	0.74	99.26
0.425	0.70	0.70	1.44	98.56
0.075	0.04	0.04	1.48	98.52
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.48 **Silt and clay %** 98.52

Remarks :-

3862

Lab Manager

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.38

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.67	0.67	0.67	99.33
0.425	0.51	0.51	1.18	98.82
0.075	0.21	0.21	1.39	98.61
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.39 **Silt and clay %** 98.61

Remarks :-

3863

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	16.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 0.97

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.49	0.49	0.49	99.51
0.425	0.37	0.37	0.86	99.14
0.075	0.12	0.12	0.98	99.02
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.98 **Silt and clay %** 99.02

Remarks :-

3864

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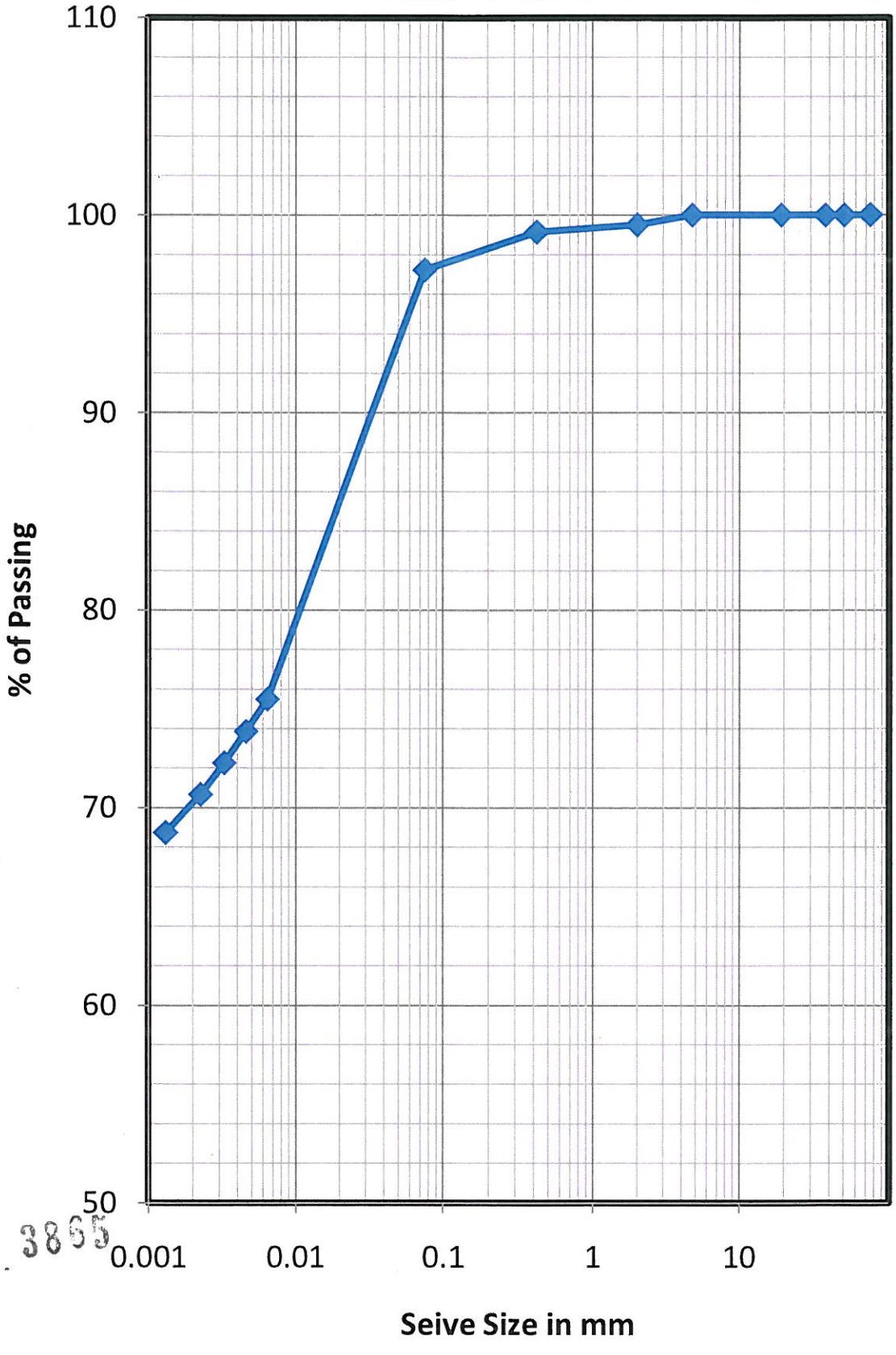
Grain Size Distribution Curve
BH-5,D-16.5m



3865

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	18.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.25

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.57	0.57	0.57	99.43
0.425	0.46	0.46	1.03	98.97
0.075	0.22	0.22	1.25	98.75
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.25 **Silt and clay %** 98.75

Remarks :-

3866

Lab Manager

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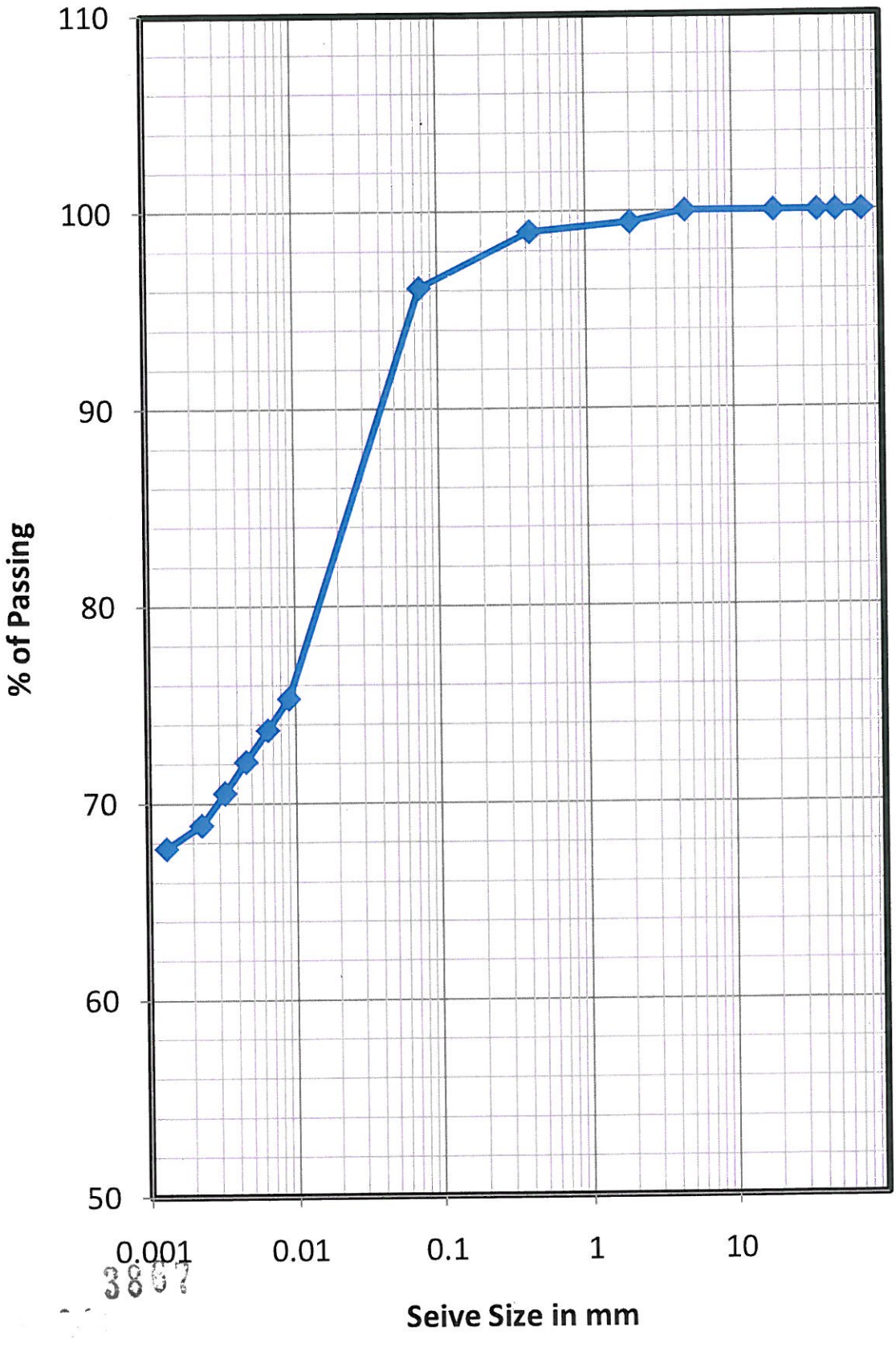
Grain Size Distribution Curve
BH-5,D-18.0m



3867

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	19.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.46

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.63	0.63	0.63	99.37
0.425	0.59	0.59	1.22	98.78
0.075	0.24	0.24	1.46	98.54
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.46 **Silt and clay %** 98.54

Remarks :-

Lab Manager

3868

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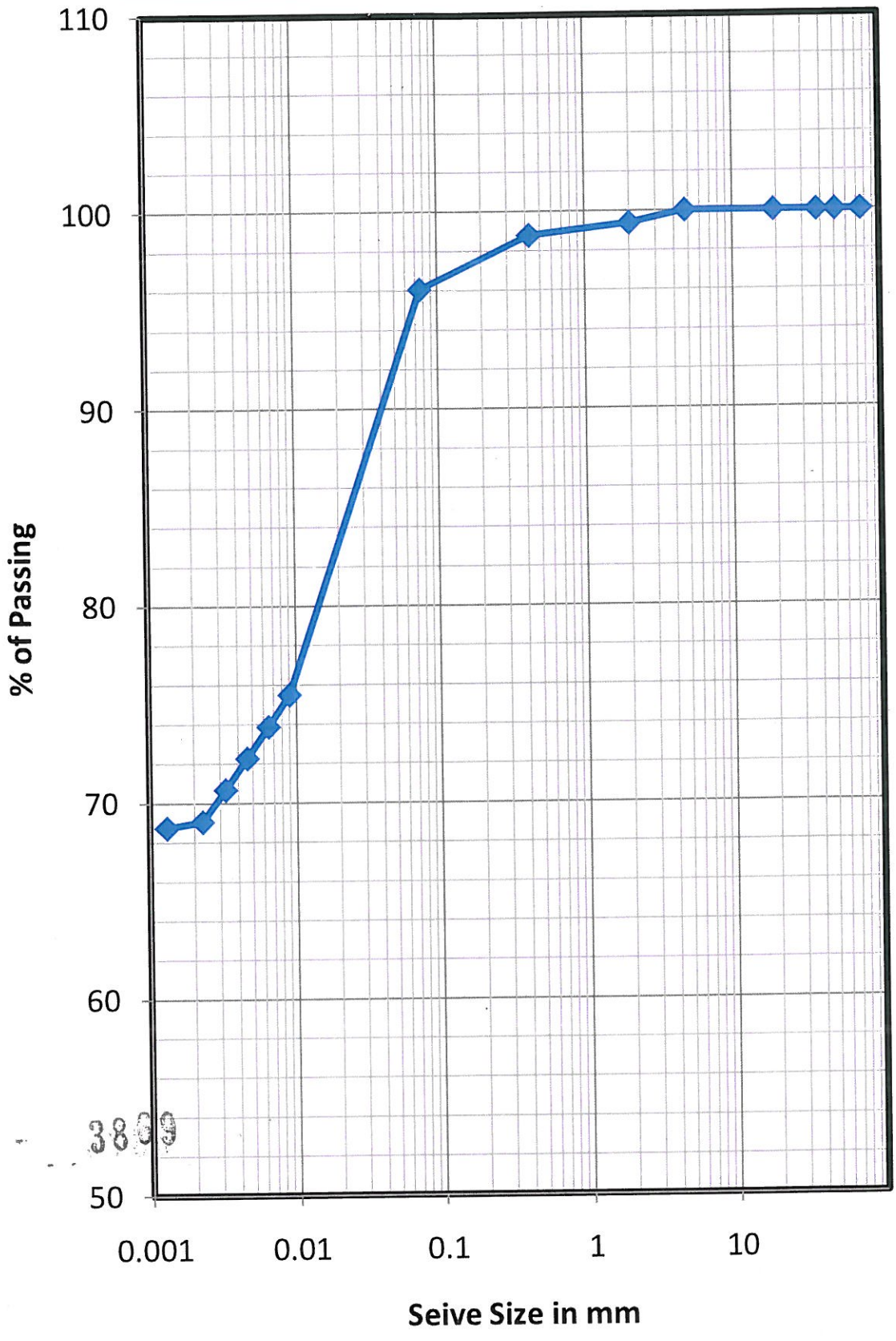
Grain Size Distribution Curve
BH-5,D-19.5m



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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	21.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 2.14

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	1.01	1.01	1.01	98.99
0.425	0.83	0.83	1.84	98.16
0.075	0.30	0.30	2.14	97.86
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 2.14 **Silt and clay %** 97.86

Remarks :-

3870

Lab Manager

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	22.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.76

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.89	0.89	0.89	99.11
0.425	0.66	0.66	1.55	98.45
0.075	0.21	0.21	1.76	98.24
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.76 **Silt and clay %** 98.24

Remarks :-

3871

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	25.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.85

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.84	0.84	0.84	99.16
0.425	0.75	0.75	1.59	98.41
0.075	0.26	0.26	1.85	98.15
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.85 **Silt and clay %** 98.15

Remarks :-

3872

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	28.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.28

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.62	0.62	0.62	99.38
0.425	0.51	0.51	1.13	98.87
0.075	0.16	0.16	1.29	98.71
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.29 **Silt and clay %** 98.71

Remarks :-

3873

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	30.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.98

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.92	0.92	0.92	99.08
0.425	0.76	0.76	1.68	98.32
0.075	0.30	0.30	1.98	98.02
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.98 **Silt and clay %** 98.02

Remarks :-

3871

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	31.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.71

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.79	0.79	0.79	99.21
0.425	0.68	0.68	1.47	98.53
0.075	0.25	0.25	1.72	98.28
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.72 **Silt and clay %** 98.28

Remarks :-

3875

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 36.33

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	17.83	17.83	17.83	82.17
0.425	13.03	13.03	30.86	69.14
0.075	5.47	5.47	36.33	63.67
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 36.33 **Silt and clay %** 63.67

Remarks :-

3876

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 34.40

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	17.18	17.18	17.18	82.82
0.425	12.37	12.37	29.55	70.45
0.075	4.86	4.86	34.41	65.59
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 34.41 **Silt and clay %** 65.59

Remarks :-

3877

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	37.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 31.86

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	15.43	15.43	15.43	84.57
0.425	11.67	11.67	27.10	72.90
0.075	4.76	4.76	31.86	68.14
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 31.86 **Silt and clay %** 68.14

Remarks :-

3878

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	40.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 17.08

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	8.68	8.68	8.68	91.32
0.425	6.07	6.07	14.75	85.25
0.075	2.34	2.34	17.09	82.91
Total	100.00			

Gravel Content (%)= **0.00**

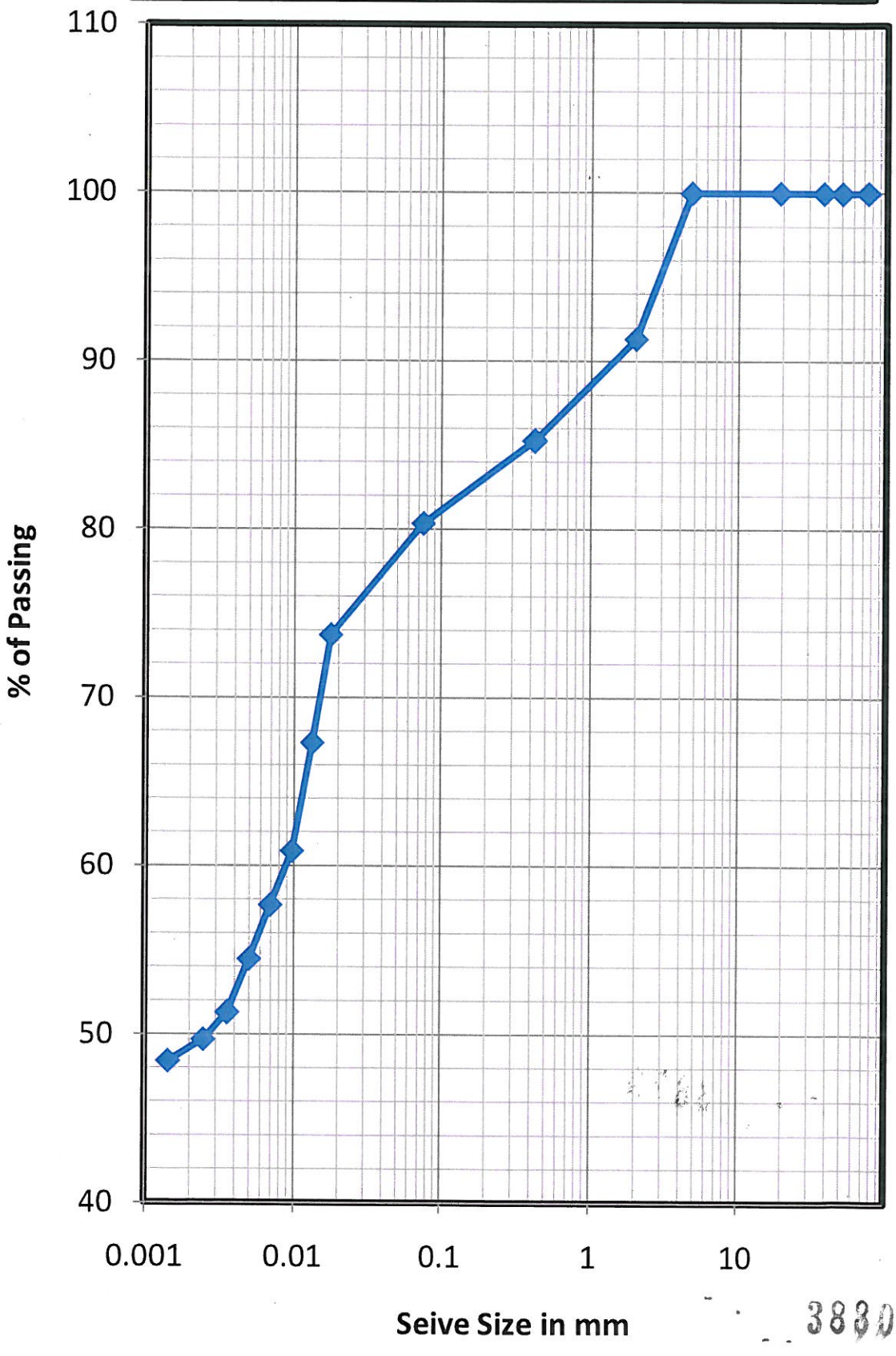
Sand Content (%) = 17.09 **Silt and clay %** 82.91

Remarks :-

3879

Lab Manager Checked By

Grain Size Distribution Curve
BH-5,D-40.5m



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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 15.83

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	7.93	7.93	7.93	92.07
0.425	5.86	5.86	13.79	86.21
0.075	2.04	2.04	15.83	84.17
Total	100.00			

Gravel Content (%)= **0.00**

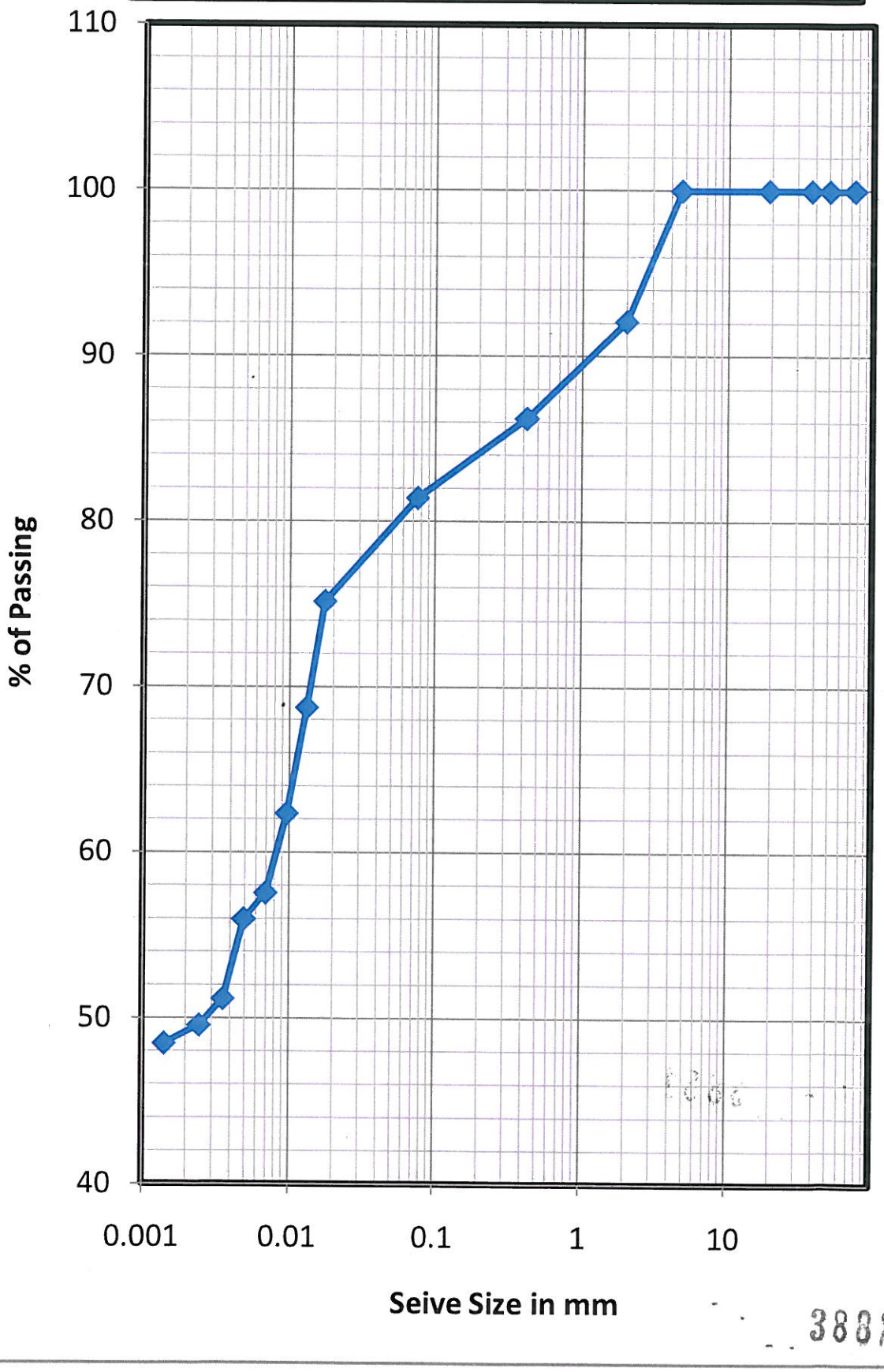
Sand Content (%) = 15.83 **Silt and clay %** 84.17

Remarks :-

3881

Lab Manager Checked By

Grain Size Distribution Curve
BH-5,D-46.5m



3882

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GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	11.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	48.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 34.76

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	16.24	16.24	16.24	83.76
0.425	13.21	13.21	29.45	70.55
0.075	5.31	5.31	34.76	65.24
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 34.76 **Silt and clay %** 65.24

Remarks :-

3883

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 9.0m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.91
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.5
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

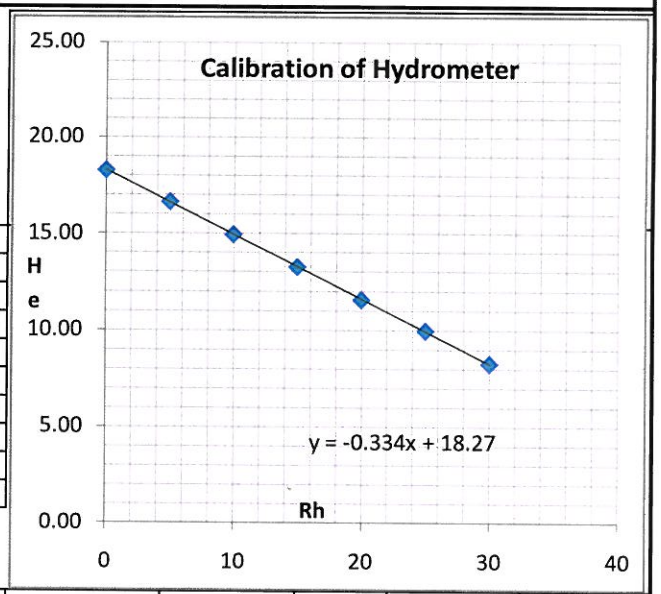
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.35	29	-2.0	8.47	29.85	0.531	0.000008341	0.012277647	0.00652262	27.35	3.240	88.62	87.65
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.240	87.48	86.53
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012277647	0.00328374	27.00	3.240	87.48	86.53
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012277647	0.00234444	26.50	3.240	85.86	84.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012277647	0.00165777	26.50	3.240	85.86	84.93
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.240	85.86	84.93
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012277647	0.00086420	26.00	3.240	84.24	83.33
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.240	84.24	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.240	84.24	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.240	82.62	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.240	82.62	81.72
	1440	27.15	32	-2.0	9.20	27.65	0.010	0.000007821	0.011888750	0.000122700	25.15	3.240	81.48	80.59

Lab Manager

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ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

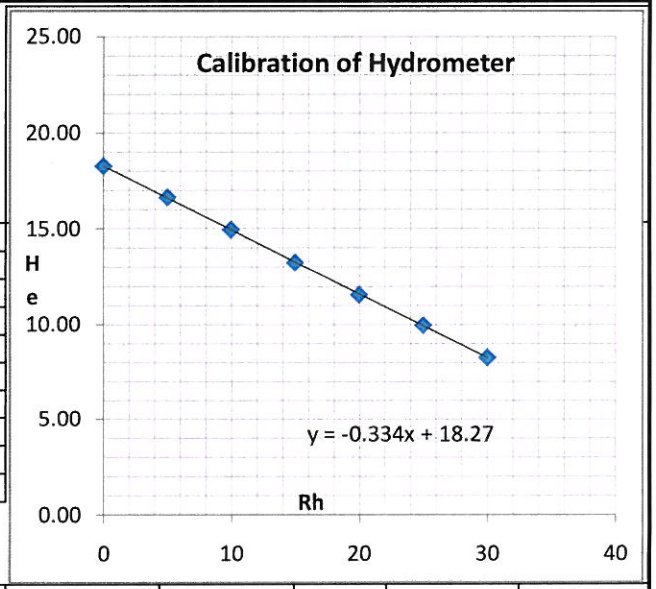
Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 10.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		98.45
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.2
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.14	29	-2.0	8.54	29.64	0.533	0.000008341	0.012240833	0.00652994	27.14	3.248	88.15	86.78
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.248	87.69	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.248	87.69	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.248	86.07	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.248	86.07	84.74
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012240833	0.00121849	26.00	3.248	84.45	83.14
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.248	84.45	83.14
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012240833	0.00061493	25.50	3.248	82.82	81.54
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012240833	0.00043482	25.50	3.248	82.82	81.54
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012240833	0.00031028	25.00	3.248	81.20	79.94
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011853101	0.00021245	25.00	3.248	81.20	79.94
	1440	26.83	32	-2.0	9.31	27.33	0.010	0.000007821	0.011853101	0.000123024	24.83	3.248	80.66	79.41

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

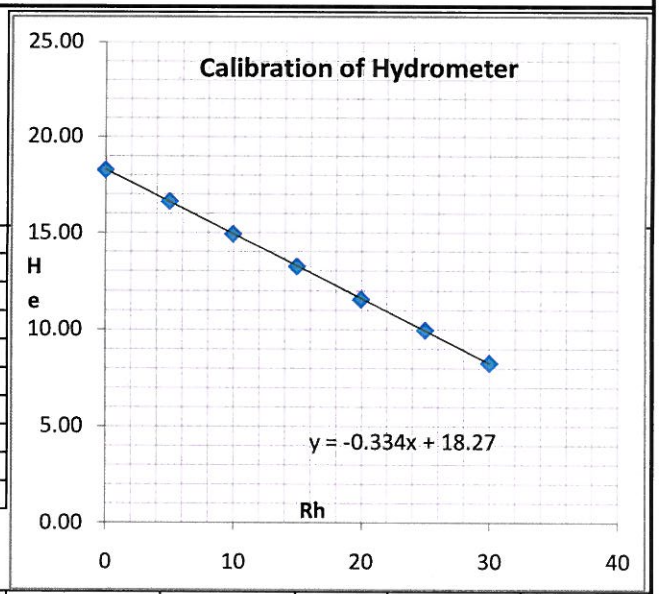
Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 13.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		98.61
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.58	29	-2.0	8.39	30.08	0.529	0.000008341	0.012277647	0.00649296	27.58	3.250	89.63	88.39
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.250	89.37	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.250	89.37	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.250	87.75	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.250	87.75	86.53
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.250	86.12	84.93
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.250	86.12	84.93
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.250	84.50	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.250	84.50	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.250	82.87	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.250	82.87	81.72
	1440	27.17	32	-2.0	9.20	27.67	0.010	0.000007821	0.011888750	0.000122652	25.17	3.250	81.80	80.66

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 16.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.02
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.5
(V)	Specific gravity of soil grains, Gs		2.65
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

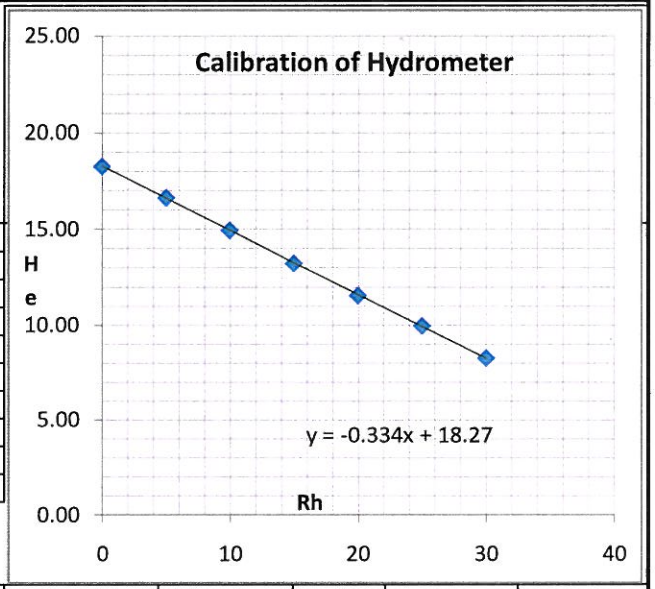
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.86	29	-2.0	8.30	30.36	0.526	0.000008341	0.012314796	0.00647621	27.86	3.244	90.38	89.49
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012314796	0.00465797	27.00	3.244	87.59	86.73
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012314796	0.00332556	26.50	3.244	85.96	85.12
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012314796	0.00237386	26.00	3.244	84.34	83.52
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012314796	0.00169422	25.50	3.244	82.72	81.91
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012314796	0.00124860	25.00	3.244	81.10	80.30
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012314796	0.00089869	24.00	3.244	77.85	77.09
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012314796	0.00064098	23.50	3.244	76.23	75.48
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012314796	0.00045711	23.00	3.244	74.61	73.88
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012314796	0.00032593	22.50	3.244	72.99	72.27
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011924722	0.00022501	22.00	3.244	71.37	70.67
	1440	23.40	32	-2.0	10.46	23.90	0.011	0.000007821	0.011924722	0.000131178	21.40	3.244	69.41	68.73

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

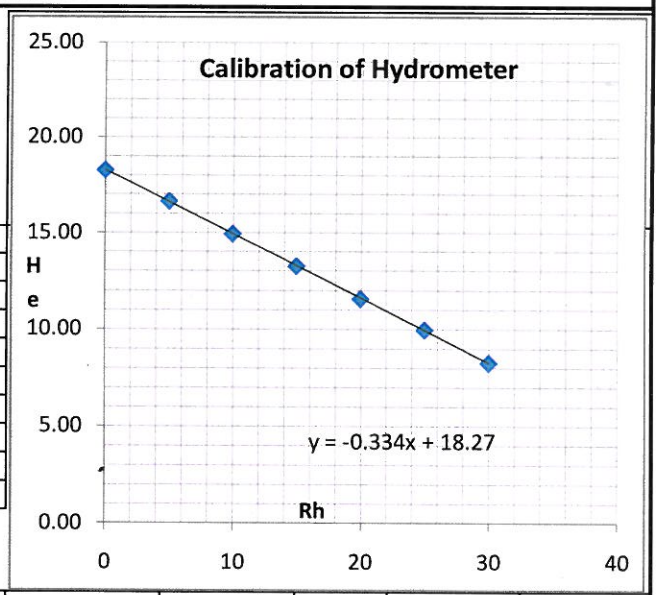
Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 18.0m

Date of Testing : 12.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		98.75
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.73	29	-2.0	8.67	29.23	0.538	0.000008341	0.012277647	0.00660190	26.73	3.245	86.75	85.66
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012277647	0.00468887	26.50	3.245	86.00	84.93
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012277647	0.00334702	26.00	3.245	84.38	83.33
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012277647	0.00238876	25.50	3.245	82.76	81.72
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012277647	0.00170456	25.00	3.245	81.13	80.12
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012277647	0.00125602	24.50	3.245	79.51	78.52
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012277647	0.00090375	23.50	3.245	76.27	75.31
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012277647	0.00064450	23.00	3.245	74.64	73.71
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012277647	0.00045955	22.50	3.245	73.02	72.11
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012277647	0.00032763	22.00	3.245	71.40	70.51
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011888750	0.00022615	21.50	3.245	69.78	68.90
	1440	23.13	32	-2.0	10.55	23.63	0.011	0.000007821	0.011888750	0.000131344	21.13	3.245	68.57	67.71

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 19.5m

Date of Testing : 12.10.12

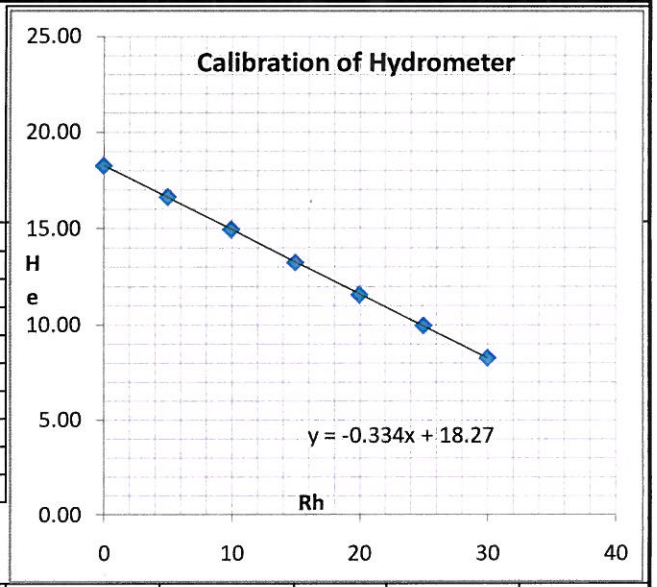
Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.54
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.65
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.66	29	-2.0	8.70	29.16	0.538	0.000008341	0.012314796	0.00663079	26.66	3.260	86.90	85.64
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012314796	0.00474772	26.00	3.260	84.75	83.52
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012314796	0.00338843	25.50	3.260	83.12	81.91
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012314796	0.00241791	25.00	3.260	81.49	80.30
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012314796	0.00172508	24.50	3.260	79.86	78.70
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012314796	0.00127094	24.00	3.260	78.23	77.09
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012314796	0.00090648	23.50	3.260	76.60	75.48
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012314796	0.00064645	23.00	3.260	74.97	73.88
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012314796	0.00046094	22.50	3.260	73.34	72.27
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012314796	0.00032862	22.00	3.260	71.71	70.67
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011924722	0.00022683	21.50	3.260	70.08	69.06
	1440	23.40	32	-2.0	10.46	23.90	0.011	0.000007821	0.011924722	0.000131178	21.40	3.260	69.75	68.73

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 21.0m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		97.86
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		1.1
(IV)	Mass of dry soil passing 75 micron Wh (gm)		48.9
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

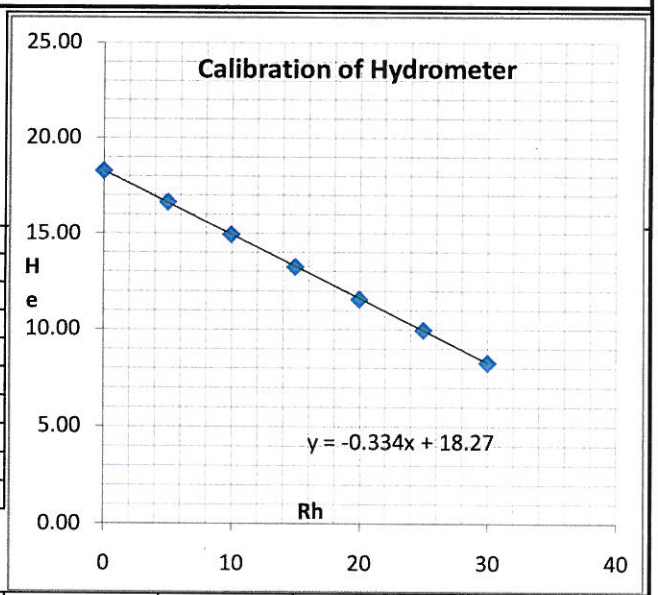
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.64	29	-2.0	8.37	30.14	0.528	0.000008341	0.012240833	0.00646576	27.64	3.268	90.31	88.38
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.268	89.86	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.268	89.86	87.93
	4	29.50	29	-2.0	8.42	30.00	0.187	0.000008341	0.012240833	0.00229237	27.50	3.268	89.86	87.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.268	86.59	84.74
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.268	86.59	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.268	86.59	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.268	84.96	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.268	84.96	83.14
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.268	84.96	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.268	84.96	83.14
	1440	27.82	32	-2.0	8.98	28.32	0.010	0.000007821	0.011853101	0.000120830	25.82	3.268	84.37	82.56

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

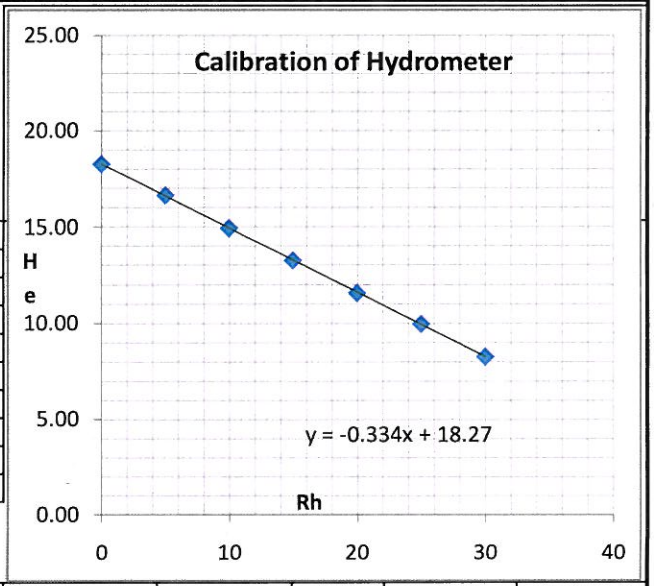
Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 22.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		98.24
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.77	29	-2.0	8.33	30.27	0.527	0.000008341	0.012277647	0.00646836	27.77	3.262	90.59	89.00
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.262	89.71	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.262	89.71	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.262	88.08	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.262	88.08	86.53
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.262	86.45	84.93
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.262	86.45	84.93
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.262	84.82	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.262	84.82	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.262	83.19	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.262	83.19	81.72
	1440	27.48	32	-2.0	9.09	27.98	0.010	0.000007821	0.011888750	0.000121962	25.48	3.262	83.11	81.65

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 25.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.15
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

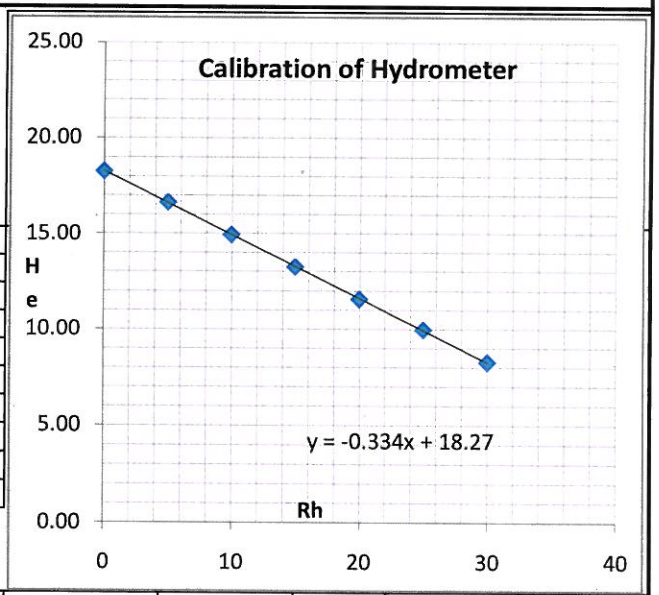
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.59	29	-2.0	8.39	30.09	0.529	0.000008341	0.012277647	0.00649167	27.59	3.265	90.09	88.42
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.265	89.79	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.265	89.79	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.265	88.16	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.265	88.16	86.53
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012277647	0.00119905	27.00	3.265	88.16	86.53
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.265	86.53	84.93
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012277647	0.00060533	26.50	3.265	86.53	84.93
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012277647	0.00042803	26.50	3.265	86.53	84.93
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012277647	0.00030554	26.00	3.265	84.90	83.33
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011888750	0.00020921	26.00	3.265	84.90	83.33
	1440	27.50	32	-2.0	9.09	28.00	0.010	0.000007821	0.011888750	0.000121913	25.50	3.265	83.26	81.72

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 28.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.71
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

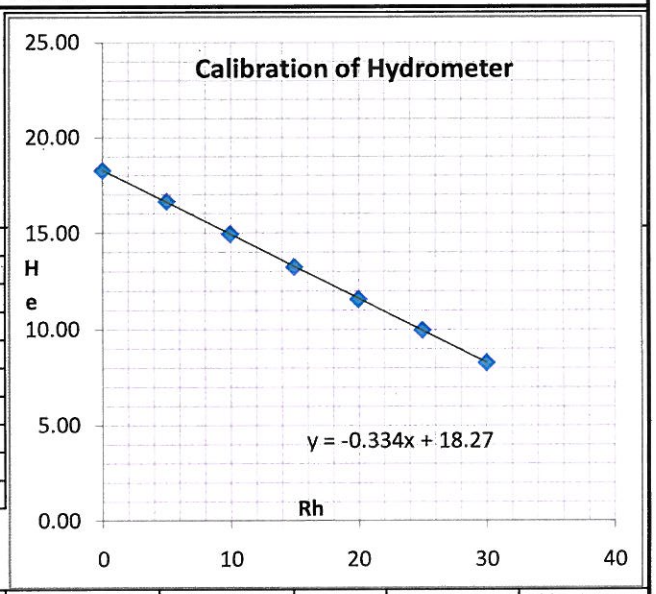
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.64	29	-2.0	8.37	30.14	0.528	0.000008341	0.012240833	0.00646576	27.64	3.239	89.54	88.38
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.239	89.08	87.93
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.239	87.46	86.34
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.239	87.46	86.34
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.239	85.84	84.74
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.239	85.84	84.74
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.239	84.22	83.14
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.239	84.22	83.14
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012240833	0.00043482	25.50	3.239	82.60	81.54
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.239	82.60	81.54
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011853101	0.00021245	25.00	3.239	80.98	79.94
	1440	26.87	32	-2.0	9.29	27.37	0.010	0.000007821	0.011853101	0.000122934	24.87	3.239	80.58	79.54

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 30.0m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.02
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		1.0
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.0
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

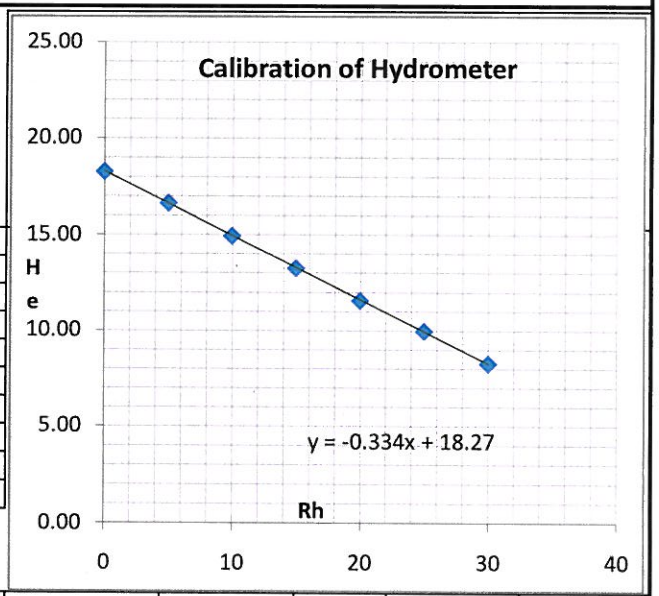
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.30	29	-2.0	8.48	29.80	0.532	0.000008341	0.012204347	0.00649007	27.30	3.255	88.86	87.10
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.255	87.88	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.255	87.88	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.255	86.26	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.255	86.26	84.55
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012204347	0.00121486	26.00	3.255	84.63	82.95
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.255	84.63	82.95
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012204347	0.00061309	25.50	3.255	83.00	81.36
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012204347	0.00043352	25.50	3.255	83.00	81.36
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012204347	0.00030935	25.00	3.255	81.37	79.76
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011817771	0.00021182	25.00	3.255	81.37	79.76
	1440	26.92	32	-2.0	9.28	27.42	0.010	0.000007821	0.011817771	0.000122466	24.92	3.255	81.12	79.51

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 31.5m

Date of Testing : 12.10.12

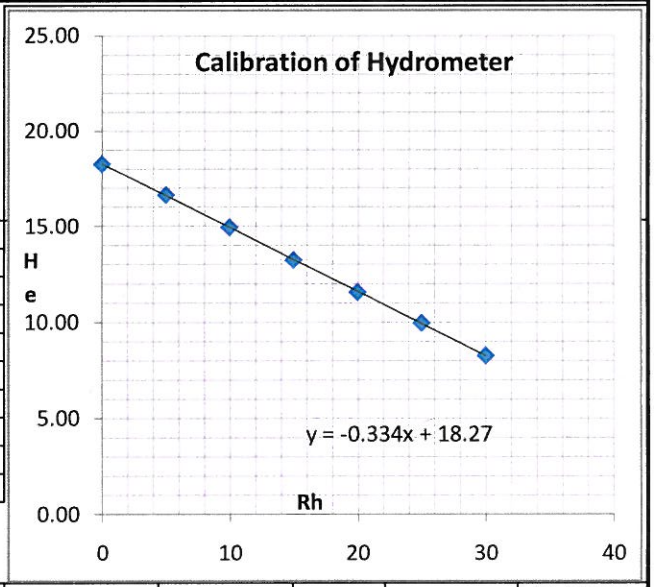
Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.28
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.84	29	-2.0	8.30	30.34	0.526	0.000008341	0.012240833	0.00643990	27.84	3.254	90.58	89.02
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.254	89.47	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.254	89.47	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.254	87.85	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.254	87.85	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.254	86.22	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.254	86.22	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.254	84.59	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.254	84.59	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.254	82.97	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.254	82.97	81.54
	1440	27.33	32	-2.0	9.14	27.83	0.010	0.000007821	0.011853101	0.000121921	25.33	3.254	82.42	81.00

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 40.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		82.91
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.5
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

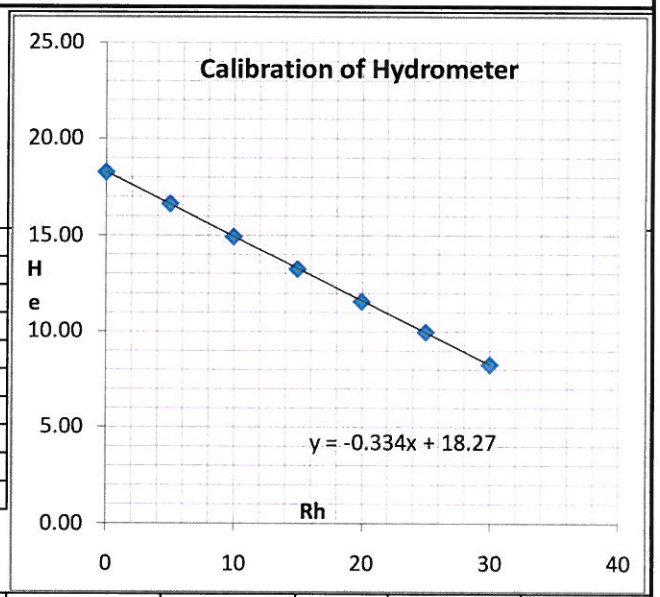
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	27.87	29	-2.0	8.96	28.37	0.547	0.000008341	0.012277647	0.00671026	25.87	3.865	100.00	82.91
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012277647	0.00477751	25.50	3.865	98.57	81.72
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012277647	0.00340912	25.00	3.865	96.64	80.12
	4	26.00	29	-2.0	9.59	26.50	0.200	0.000008341	0.012277647	0.00245374	24.00	3.865	92.77	76.92
	8	25.00	29	-2.0	9.92	25.50	0.144	0.000008341	0.012277647	0.00176502	23.00	3.865	88.90	73.71
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012277647	0.00133168	21.00	3.865	81.17	67.30
	30	21.00	29	-2.0	11.26	21.50	0.079	0.000008341	0.012277647	0.00097089	19.00	3.865	73.44	60.89
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012277647	0.00069664	18.00	3.865	69.58	57.69
	120	19.00	29	-2.0	11.92	19.50	0.041	0.000008341	0.012277647	0.00049964	17.00	3.865	65.71	54.48
	240	18:00	29	-2.0	12.26	18.50	0.029	0.000008341	0.012277647	0.00035821	16.00	3.865	61.85	51.28
	480	17.50	32	-2.0	12.43	18.00	0.021	0.000007821	0.011888750	0.00024694	15.50	3.865	59.91	49.67
	1440	17.10	32	-2.0	12.56	17.60	0.012	0.000007821	0.011888750	0.000143330	15.10	3.865	58.38	48.40

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

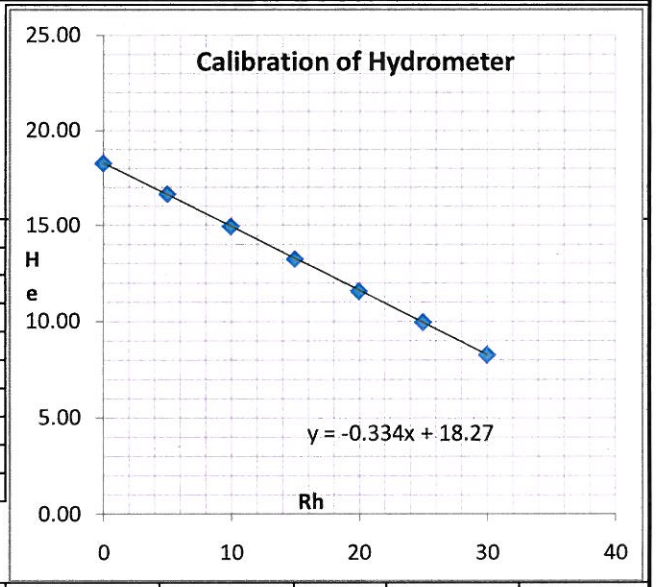
Location : BH-5(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 46.5m

Date of Testing : 12.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		84.17
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		7.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		42.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.32	29	-2.0	8.81	28.82	0.542	0.000008341	0.012240833	0.00663350	26.32	3.799	100.00	84.17
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012240833	0.00471921	26.00	3.799	98.77	83.14
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012240833	0.00336808	25.50	3.799	96.87	81.54
	4	26.00	29	-2.0	9.59	26.50	0.200	0.000008341	0.012240833	0.00244638	24.00	3.799	91.18	76.74
	8	25.50	29	-2.0	9.75	26.00	0.143	0.000008341	0.012240833	0.00174486	23.50	3.799	89.28	75.14
	15	23.50	29	-2.0	10.42	24.00	0.108	0.000008341	0.012240833	0.00131718	21.50	3.799	81.68	68.75
	30	21.50	29	-2.0	11.09	22.00	0.078	0.000008341	0.012240833	0.00096077	19.50	3.799	74.08	62.35
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012240833	0.00069455	18.00	3.799	68.38	57.56
	120	19.50	29	-2.0	11.76	20.00	0.040	0.000008341	0.012240833	0.00049464	17.50	3.799	66.48	55.96
	240	18.00	29	-2.0	12.26	18.50	0.029	0.000008341	0.012240833	0.00035714	16.00	3.799	60.78	51.16
	480	17.50	32	-2.0	12.43	18.00	0.021	0.000007821	0.011853101	0.00024620	15.50	3.799	58.88	49.56
	1440	17.15	32	-2.0	12.54	17.65	0.012	0.000007821	0.011853101	0.000142806	15.15	3.799	57.56	48.45

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

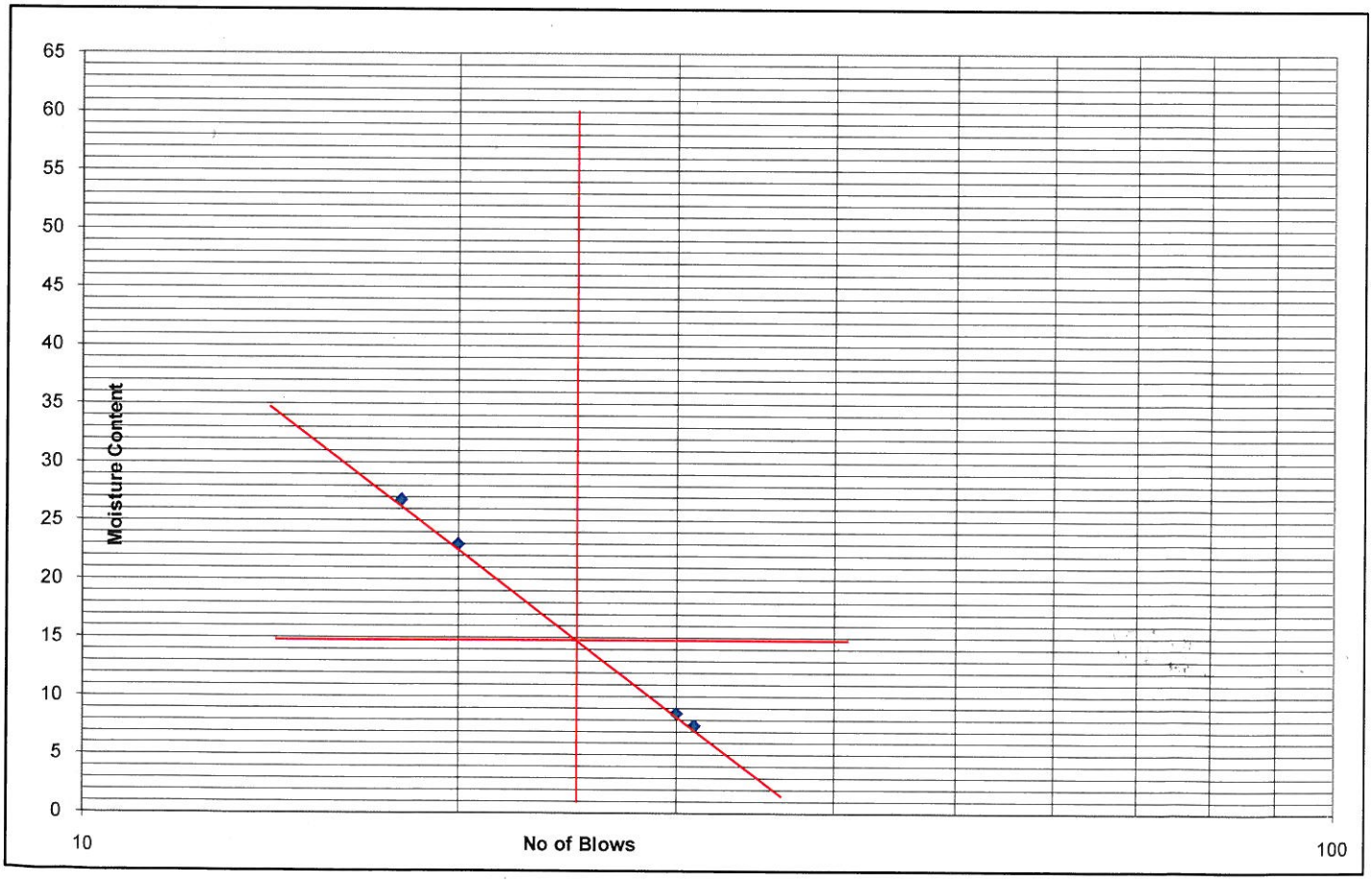
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	12.10.12
Location	:	BH-5(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	1.5m	Tested by	:	D.Mohanty

Number of Blows	31	30	20	18	Plastic Limit	
Container No.	E1	E2	E3	E4	NP	
Container Weight (gm) (W1)	30.48	35.24	37.88	34.61		
Container + Wt. of wet soil (gm) (W2)	81.42	93.28	96.99	101.42		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.88	88.70	85.95	87.31		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.55	4.58	11.04	14.12		
Wt. of oven dry soil (gm) (W3-W1)	47.40	53.46	48.07	52.70		
Moisture Content (%)= ((W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.48**	**8.57**	**22.97**	**26.79**		

Result Summary

Liquid Limit (WL)	15	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



3898